

REMARKS

In response to the Examiner's objections to the specification under item 1 of the official action, the Applicants have replaced throughout the claims the wording "electron conductor" by "n-type semiconductor" on one hand, and "hole conductor" by "p-type semiconductor" on the other hand. Thereby, this objection is believed to be rendered moot.

In response to claim rejections under 35 U.S.C. §112, first paragraph, set forth in item 3 of the official action, the Applicants have replaced the wording "in that said p-n heterojunction comprises a plurality of individual point-contact heterojunctions between said quantum dots and said electron conductor and said hole conductor" by the wording "with a plurality of individual point-contact junctions between said quantum dots and said n-type semiconductor on one hand and said quantum dots and said p-type semiconductor on the other hand." The Applicants submit that this amendment finds support throughout the specification and more specifically on page 3, third and fourth paragraphs, stating that

"a preferred quantum dot sensitized heterojunction is constituted of sintered particles of nanocrystalline TiO_2 onto which PbS particles in the nanometer range are adsorbed as sensitizers, the pores between the particles being filled with amorphous OMeTAD.... Light is absorbed by the quantum dots and produces electron-hole pairs. The electrons are injected from the quantum dots into

the electron conducting solid, while the holes are injected in the hole conducting side of the junction...."

The same is moreover illustrated in particular by Figure 2, as the Examiner himself noted in a previous office action. The Applicants submit that as reworded now, the claimed feature is clear and that the rejection under 35 U.S.C. §112, first paragraph, is thereby believed to be rendered moot.

Claim 1, as now amended, is directed to a "solid state p-n heterojunction **consisting of** an n-type semiconductor, a p-type semiconductor and a sensitizing semiconductor..., said sensitizing semiconductor **consisting of** individual particles..., said individual particles being quantum dots...." The recitation of these features is therefore no longer open ended. The actual recitation excludes the presence of a sensitizing semiconductor in form of clusters or other larger aggregates. Thereby, amended claim 1 is clearly distinguishable from the object disclosed by the reference Siebentritt. The Applicants submit that the claim rejection under 35 U.S.C. §102 of claims 1, 5 to 8, 13 to 15 and 17 is thereby rendered moot.

Turning now again to the non-obviousness of claim 1 over a combination of the reference Siebentritt and the reference Vogel, the Applicants respectfully traverse the argument of the Examiner under item 11 of the office action, stating that the Applicants allegedly attacked the two references individually, where the rejections are based on combinations of the same.

The content and the teaching of the Vogel reference have been previously thoroughly discussed. It is clear from Vogel's teaching that upon repeating the Vogel dipping-coating process 20 to 30 times, an important to strong clustering of the CdS particles occurs; that is to say at least an important fraction, if not all, of the deposited CdS is no more in the form of quantum dots but in the form of larger aggregates. In other words, repeating Vogel's process at least 20 times is a warranty for the artisan to get clusters and other larger aggregates within a structure of reasonable thickness.

Thus, having in hand **both** the reference Siebentritt and the reference Vogel, the skilled artisan would have to make use of Vogel's process and basic teaching in a way the Siebentritt reference teaches away from, in order to come close to the claimed invention.

In other words, having in hands **both** the reference Siebentritt and the reference Vogel, the skilled artisan shall first of all recognize that Siebentritt's teaching is to a large extent erroneous, and thereafter put Vogel's teaching in practice in another manner.

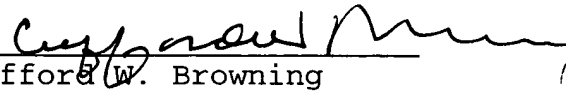
In still other words, the skilled artisan can not use the combination Siebentritt + Vogel **as it is** for coming close to the claimed invention.

The Applicants submit that according to a constant practice in patent matters, it is considered as a non-obvious mental step to reverse a teaching of a reference, also if this teaching concerns how to put in practice the teaching of a previous reference.

Thus, Applicants assert the claimed invention cannot be obvious over Siebentritt in view of Vogel.

In view of the above, a favorable reconsideration and allowance of the pending claims is respectfully requested.

Respectfully submitted,

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